SUPPLEMENTAL CONSTRUCTION SPECIFICATIONS

SUPPLEMENTAL CONSTRUCTION SPECIFICATIONS
NORTH KING AML RECLAMATION PROJECT

EXPLANATION

A. The purpose of this section of the Specifications is to provide additional information necessary to complete the Standard Construction Specifications and to specify supplementary requirements, modifications, and/or deletions needed to tailor the entire Construction Specifications to this specific project.

B. References to Section, Paragraph, and Sub-paragraph numbers used in these Supplemental Construction Specifications are intended to align with reference numbers for the corresponding Sections, Paragraphs, and Sub-paragraphs in the Standard Construction Specifications.

C. In the event of any discrepancy between the Standard Construction Specifications and these Supplemental Construction Specifications, the Supplemental Construction Specifications shall prevail.

D. If any section of the Standard Construction Specifications is modified or if any Paragraph, Sub-paragraph, or Clause is altered or removed by these Supplemental Construction Specifications, the unchanged provisions of that Section, Paragraph, Sub-paragraph, or Clause in the Standard Construction Specifications shall remain in effect. Unless these Supplemental Construction Specifications explicitly reference a modification or deletion of a Paragraph, Sub-paragraph, or Clause from the Standard Construction Specifications, no changes are intended. The paragraphs in these Supplemental Construction Specifications are solely meant to supplement, clarify, or expand upon the Standard Construction Specifications.

E. The following set of standard specifications, updated as of July/August 2025, has been used for this project:

02000 SUBSURFACE INVESTIGATION
02010 FIELD ENGINEERING
02100 MOBILIZATION, SITE CLEARING & PREPARATION
02110 IMPOUNDMENTS
02120 SEDIMENT AND EROSION CONTROL
02200 EARTHWORK, ROUGH GRADING
02220 EARTHWORK, DAMS
02300 DRAINAGE SYSTEMS, GENERAL
02400 SUBGRADE PREPARATION, WITHOUT COVER MATERIAL
02500 FENCING
02700 PERMANENT SEEDING

DOCUMENT N - GENERAL CONDITIONS

1-04 ENGINEER

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SECTION 02000 SUBSURFACE INVESTIGATION

1.1 DESCRIPTION

A. Geotechnical and Hydrological Reports

1. (Revised) No geotechnical study was prepared for this site by the Division.

SECTION 02010 – FIELD ENGINEERING

1.2 QUALITY ASSURANCE

E. (New Paragraph) Surveys at the project site used by the Engineer in preparing the Plans and Specifications are available for review through the Engineer.

F. (New Paragraph) GPS machine control is highly recommended for this project but not expressly required.

3.2 DIMENSIONS AND ELEVATIONS

B. (New Paragraph) Horizontal measurements are in U.S. Survey feet and are based upon the NAD 83 Iowa State Plane Coordinate system, South Zone.

C. (New Paragraph) Elevation measurements are based upon the NAVD 1988 and are in U.S. Survey feet.

D. (New paragraph) Existing topography shown on this drawing was developed from Lidar information for Mahaska County, Iowa, which is publicly available through Iowa Geodata at https://geodata.iowa.gov/ .

E. (New paragraph) Additional topographical information was collected by conventional surveying methods and incorporated into the LiDAR.

3.3 POSITION, GRADIENT, AND ALIGNMENT

F. (New Paragraph) Should there exist significant differences between the LiDAR elevations shown on the drawings and those reported by the surveying equipment, the Contractor shall direct the surveyor to calibrate the survey instruments to the LiDAR elevations shown on the drawings.

3.6 STAKE OUTS

C. (New Paragraph) The construction staking requirements stipulated in Paragraph “A” is further clarified as follows: required construction staking shall include the following with applicable elevation information for proper construction:

1. Project boundary and access route

2. Terraces, risers, intake structures, and Wetland Pools

SECTION 02100 – MOBILIZATION, SITE CLEARING & PREPARATION

1.2 QUALITY ASSURANCE

D. (Added Language) Additional guidelines and information regarding the endangered Indiana Bat and Northern Long-Eared Bat can be found at the following links:
http://www.fws.gov/midwest/endangered/mammals/inba/
https://www.fws.gov/species/northern-long-eared-bat-myotis-septentrionalis

1.3 JOB CONDITIONS

A. (Added Language) The Contractor shall complete utility locates (One Call) prior to commencing construction to verify utilities and utility locations.

B. (Added Language) Following the Pre-Construction Conference, a brief walk-through of the project limits by the Contractor, Engineer, Division, Construction Observer, and Landowner shall take place to discuss and identify trees to remain undisturbed. If any trees are identified, they shall be marked at that time. Refer to ISU Extension Publication provided in Paragraph 1.2.C for tree protection during construction.

3.1 SITE ACCESS

A.

1. (Added Language) Designated access roads shown on the Plans and used by the Contractor shall be maintained to allow reasonable access for four-wheel drive vehicles. Secondary access or haul roads not indicated on the Plans shall be approved by the Engineer and reclaimed after use in accordance with Section 02400 and 02700. Contractor shall repair any damage to access or haul roads at no cost to the Division. Access road and haul road construction and maintenance shall be considered subsidiary to Mobilization/Demobilization.

2. (Added Language) All traffic control devices and operations dealing with public traffic and roadways shall be in accordance with applicable Iowa laws and the latest edition of the Manual on Uniform Traffic Control Devices for Streets and Highways (MUTCD). Traffic control devices shall be installed prior to initiating grading activities.

3. (Added Language) The Contractor shall be responsible for the safe movement of mobile equipment.

4. (Added Language) The Contractor shall be responsible to reimburse the landowner for livestock or other property injured or damaged by Contractor's traffic on access roads.

5. (Added Language) All landowner(s) gates shall remain closed during the work

B.

1. (Added Language) If an existing entrance within the Right-Of-Way must be widened to facilitate access, approval from the Mahaska County Secondary Roads department must be obtained prior to performing the improvements.

2. (Added Language) Stone surfacing placed in specific locations along the access route, to improve site accessibility, may be approved by Division for payment. If so approved, Macadam Stone shall be placed as directed by Division or Engineer and be payable at the bid unit price for Macadam Stone. A minimum eight-ounce (8 oz) non-woven filter fabric shall be installed under the stone at no additional cost to the Division. Any costs for stone surfacing placed by Contractor without prior Division approval shall be at Contractor’s expense.

3. (Added Language) The cost for placement of the stabilized construction entrance is considered incidental to the bid unit price for macadam stone. The macadam stone placed at the stabilized construction entrance shall be underlain by a minimum eight-ounce (8 oz) non-woven filter fabric at no additional cost to Division. See plan drawings for dimensions of the stabilized entrance.

3.4 OFFICE AND LAY-DOWN AREA

A.

1. (Revised) Contractor’s Field Office is not required except that sanitary facilities shall be provided.

2. (Added Language) The Contractor shall ensure that his representative on site has an operating cellular phone capable of direct communication with Engineer and Division.

3.6 EXISTING FENCES

A.

1. (Revised) Existing fences within the project limits are in poor condition and shall not be protected unless otherwise directed. Fences shown for removal shall be removed and disposed of by the Contractor. No salvaging of fencing materials is required.

2. (Added Language) New fence installation for this project will consist only of posts set at 10-foot intervals, as specified in Section 02500 – Fencing.

3.7 CLEARING AND GRUBBING

F. (New Paragraph) Contractor shall remove wetland vegetation along existing channels and stockpile on site. Upon completion of the final grading, the Contractor shall spread the wetland vegetation from the stockpile in the constructed wetland area and along the constructed stream channels.

3.8 DEBRIS REMOVAL AND DISPOSAL

A. (Added Language) Metal refuse shall not be buried on the site. To the extent practicable, Contractor is encouraged to salvage scrap metal at a metal recycling facility.

1. (Revised) Cleared and grubbed material, rubbish, scrap metal, tires, and other waste encountered within the project limits shall be collected, stockpiled, and disposed of at a Division-approved offsite facility unless otherwise directed. Onsite burial of waste shall not be permitted without written approval from the Division and Engineer.

2. (Added Language) Special items such as tires, appliances, and other unusual debris shall be sorted and piled separately at a location approved by the Engineer. Collection, sorting, and stockpiling shall be considered incidental to “Clearing and Site Preparation.”

3. (Added Language) The cost for removal, transport, and disposal of tires, appliances, or other unusual debris at an approved facility shall be negotiated with the Contractor. Costs must be supported by disposal tickets or invoices from the facility.

C. Burying

4. Trees, stumps, brush, and the ashes from the burning of landscape waste may be buried within the project limits provided the requirements below are followed.

b. (Added Language) Uncut tree trunks placed in the muck of dewatered ponds shall be placed in such a way to minimize voids and allow proper compaction. Root balls shall be removed or alternated end for end in the stack, and limbs greater than eight (8) inches in diameter shall be removed prior to placement. Limbs smaller than eight (8) inches in diameter shall be broken or crushed into the stack to obtain desired results.

3.11 MEASUREMENT AND PAYMENT

c. (Added Language) For special items like tires, the contractor shall collect and sort tires into a pile at a convenient, approved location onsite. The work of collecting, sorting, and stacking the tires shall be incidental to “Clearing and Site Preparation”. The cost for the actual removal, transport, and disposal of the tires at an approved facility shall be negotiated

with the Contractor. The agreed cost for tire disposal may include reasonable handling and freight costs. The agreed cost of tire disposal must be identified on an invoice from the Contractor, and it must be supported by tickets or invoices from the disposal facility. Payment for disposal of other special items, if encountered, will be handled in a similar fashion.

d. (Added Language) Removal and disposal of existing fences within the project limits, where directed, shall be incidental to "Clearing and Site Preparation." No salvaging of fencing materials is required. New fence posts at 10-foot spacing will be measured and paid for under Section 02500 – Fencing.

SECTION 02110 – IMPOUNDMENTS

1.1 DESCRIPTION

A. (Added Language) Work under this section includes the controlled neutralization and dewatering of impounded water on site, construction of any minor impoundment discharge or outlet structures, and incidental earthwork to facilitate these activities. Specifically, the Contractor shall furnish all labor and materials to treat and discharge water from existing pits/impoundments in accordance with the approved plan and permit requirements. Impoundment work also includes installation of outlet pipes and riprap let-down structures as shown on the Plans, as well as any temporary diking or pumping needed to manage water during neutralization.

B. (Added Language) Temporary Containment Dike: If necessary to prevent untreated water from overflowing during chemical treatment (neutralization), the Contractor shall construct a temporary dike or berm of on-site spoil material across the existing outlet or breach of the pit pond(s). This measure is only required if natural containment is insufficient. Any such dike construction and its later removal shall be considered incidental to the impoundment discharge work (no separate pay item).

1.5 JOB CONDITIONS

(No changes to standard permit references; all NPDES permit conditions for water discharge must be followed.)

- *(Added Language)* Neutralization & Dewatering Plan: Prior to commencing any treatment or dewatering of pit water, the Contractor must prepare and submit a detailed Neutralization and Discharge Plan to the Engineer and Division for approval (see Submittals). No impounded water shall be discharged without an approved plan.

- *(Added Language)* Water Characterization: Water samples collected during design indicate that several pits on site contain strongly acidic water (pH as low as ~3.0), while others are more neutral or alkaline. The Contractor shall anticipate that chemical neutralization will be required for those pits with low pH (generally pH < 6.0) before discharge. Pits with higher pH water may not require additives but still must be tested and meet pH and other criteria before release. All discharges must comply with NPDES water quality limits (pH between 6.5 and 9.0, and any specified limits on iron, suspended solids, etc.).

1.6 SUBMITTALS

A. (Added Language) Neutralization and Discharge Plan: The Contractor shall submit a Neutralization and Discharge Plan for approval at least 14 days before planned dewatering of any pit. This plan shall detail the proposed procedures and materials for treating the water and discharging it. At a minimum, include:

(1) the chemical to be used for neutralization (which shall be 20–25% liquid caustic soda, unless an alternative is approved), safe handling and storage measures for it on site, and estimated quantities;

(2) methods for applying and mixing the chemical into the water (e.g., pumping circulation, aspirating with the pump, use of an agricultural spray bar, etc.);

(3) procedures for field testing water pH (and any other required parameters like alkalinity or iron) during treatment, including frequency of testing and equipment (calibrated pH meter, litmus, etc.);

(4) the intended discharge route for each pit (e.g., through a specific breach or into a specific channel section), with measures to prevent erosion or scour (such as pumping at controlled rates, using an energy dissipator or riprap apron);

(5) contingency actions if initial treatment is insufficient (additional dosing steps); and

(6) handling of any residual sludge or precipitate. The plan must ensure compliance with NPDES permit conditions for the discharge. The Contractor shall not proceed with pit water discharge until the plan is reviewed and approved by the Engineer/Division.

3.4 WATER SAMPLING AND TESTING (ALL IMPOUNDED WATER BODIES)

A. (Added Language) Initial Water Testing: Before treating or pumping any impounded water, the Contractor shall collect a representative sample from each water-filled pit or impoundment and perform field measurements of pH. At least one sample from each major pit requiring discharge shall also be analyzed (field or lab) for acidity (or alkalinity) to quantify the amount of neutralization needed. The Engineer will provide any available baseline water chemistry data from design investigations; however, the Contractor is responsible for verifying conditions at the time of construction. These initial tests will form the basis for the Contractor's neutralization approach (as detailed in the submitted plan).

B. (Added Language) Field Monitoring: During the neutralization process, the Contractor shall continuously or periodically monitor the pH of the water being treated. A calibrated handheld pH meter shall be used (test strips are not sufficient for precise control). Water temperature and clarity (turbidity) should also be observed. Monitoring records (time, pH readings, amount of chemical added) shall be maintained and provided to the Engineer upon request.

3.5 NEUTRALIZATION AND DEWATERING PLANNING MEETING

B. (Revised) Before beginning any work on the pit water, the Contractor, Engineer, and Division will hold a preparatory on-site meeting to review the Contractor's Neutralization and Dewatering Plan. At this meeting, all aspects of the plan (items 1–8 above) will be discussed, and any necessary revisions will be made. The Contractor shall not commence treatment until receiving plan approval at or after this meeting.

3.6 WATER TREATMENT

A. (Added Language) Neutralizing Agent: The standard neutralizing agent for acidic water on this project is Liquid Caustic Soda (20–25% NaOH solution). The Contractor shall apply caustic soda into the pit water in a manner that achieves thorough mixing. Options include injecting through pump intakes, spraying over the surface, or agitating with excavation equipment. The goal is a uniform distribution of the chemical throughout the pond's volume. Treatment shall continue (in stages) until the water's pH is within the target range of 6.5 to 9.0 and meets any other NPDES effluent requirements (such as maximum iron, manganese, and total suspended solids (TSS) limits). Lime (calcium oxide or hydroxide) treatment is not anticipated for this project unless caustic soda proves ineffective or impractical; any substitution would require Engineer approval.

B. (Added Language) Multiple-Stage Treatment: The Contractor should add neutralizing agent in increments, allowing time between doses for the chemical reaction to stabilize (typically several hours) before re-testing pH. Do not "overshoot" the pH – adding chemicals slowly and testing often is required to avoid raising the pH above permit limits. If an overdose occurs and pH exceeds 9.0, the Contractor must notify the Engineer and may need to add dilution water or CO_2 (with Engineer approval) to buffer the water back into range.

C. (Added Language) Reference Data: For the Contractor's information, water sampling conducted on April 4, 2024 yielded the following characteristics of the pit waters on site (prior to any treatment):

PIT ID	SAMPLE ID	pH	Acidity (mg/L)	Total Fe (mg/L)	Mn (mg/L)	TSS (mg/L)
NK1	SW-1	3.7	304	15.7	0.01	154
NK2	SW-3	2.9	710	134	142.9	1150

Both pits (NK1 and NK2) are strongly acidic and will require caustic soda treatment. The Contractor should use these results to plan chemical needs, but actual treatment shall be based on real-time field measurements as described.

D. (Added Language) Bidding Assumption: For bidding purposes, assume each pit that requires neutralization will need at least one round of treatment and testing. The Contractor shall include the cost of pH testing and minor adjustments in the bid for impoundment work. The bid schedule provides a unit price item for caustic soda (by the gallon) to account for the variability in the amount needed.

3.7 DISCHARGE OF IMPOUNDMENTS

A. *(Revised)* Dewatering Process: After acceptable water quality is achieved in a pit (or if a pit was determined not to need treatment), the Contractor shall discharge or pump out the water in a controlled manner. Whenever possible, utilize the existing low point or breach in the pit highwall as the outlet to minimize additional excavation. If pumping is required (likely for higher pits with no natural outlet or to speed up dewatering), the pump intake should be suspended near mid-depth to avoid sucking bottom sediment. Discharge hoses or channels must outlet to a stable area – preferably the designed channels or riprap outlet locations shown on plans. The flow rate should be controlled to prevent flooding or erosion downstream. If necessary, the Contractor shall construct a temporary stilling basin or use an energy dissipation device (such as a splash pool lined with rock or a perforated discharge nozzle) at the outlet to slow the water velocity.

- *(Added Language)* Water Clarity and Treatment During Pumping: The Contractor shall monitor the clarity of the water during pumping. If significant sediment is being drawn out (visible turbidity spike), the Contractor shall throttle back the flow or briefly stop pumping to allow sediment to settle. Pumping shall also be halted if pH readings of the effluent drift outside 6.5–9.0. In such case, the Contractor must recirculate and retreat the water until pH is back in range. Essentially, the Contractor is responsible for ensuring that at all times during discharge, the effluent meets permit limits.

B. (Added Language) Sediment/Sludge Management: Many pits contain a layer of “muck” or fine sediment at the bottom (see table above). After water drawdown, this sediment will be exposed. The Contractor is not required to remove and haul off this sediment; it can be blended into the surrounding spoil during backfilling. However, if the sediment is highly fluid, the Contractor should allow time for it to drain or dry out (or mix in dry material) before burying it, to avoid excessive settlement. Any obviously contaminated sediment (e.g., bright orange iron precipitate or oily residue) should be buried deep within the fill (minimum 5 feet of cover) or in a location directed by the Engineer.

C. (Added Language) Sequence Considerations: Pits WB9 and WB10 are large and may require significant time to treat and discharge. The Contractor may work on treating one pit while grading others. However, care should be taken to not fill in a pit that still contains untreated water or sludge that could contaminate runoff. The recommended sequence is to treat and discharge all water from a pit, then immediately follow with backfilling that pit with spoil. Multiple pits may be handled in parallel if resources allow, but the Contractor must remain vigilant in monitoring each.

D. (Added Language) Minor Impoundments: Several smaller water bodies (WB1–WB5, WB8, WB12) have relatively low volumes and are planned to be backfilled and regraded. These can often be breached with a small channel or pumped out in a day. The Contractor shall still ensure any discharge from these meets pH and erosion control requirements, but the effort is expected to be modest compared to the larger pits. Include these in the neutralization plan (if any treatment needed) and handle them similarly.

(All water discharge operations are subject to the observation and approval of the Engineer or Construction Observer. The Contractor shall keep a log of treatment volumes and discharge dates for inclusion in the SWPPP records.)

3.11 MEASUREMENT AND PAYMENT

A. (Revised) Impoundment Discharge: If a bid item "Impoundment Discharge and Treatment" (Lump Sum) is provided, it will cover all work related to planning, treating, and discharging all pit water on the site (excluding the cost of the neutralizing chemical itself). This lump sum shall include development of the Neutralization Plan, water quality testing, neutralization labor and equipment, pumping and dewatering, temporary containment or outlet works, and management of residuals. If no separate item is listed, then all such work is incidental to the Earthwork grading items.

B. *(Added Language)* Caustic Soda (20–25% Liquid): Caustic soda solution used for neutralization will be measured by the Gallon actually used on site and will be paid at the contract unit price per gallon. This payment covers furnishing the chemical, transportation, storage, handling, and application into the water (including any equipment like pumps or sprayers used specifically for applying the chemical). The Contractor must provide delivery tickets or logs to verify the quantity of caustic soda used. Any unused chemical at the end of the project is to be removed by the Contractor (and will not be paid).

C. *(Added Language)* Incidentals: No separate payment will be made for field testing equipment (pH meters, etc.), minor consumables for neutralization (like baking soda for spills, or indicator solutions), or for extra labor time spent in monitoring treatment. These costs shall be included in the bid prices for the work (either the lump sum for discharge or overhead in general). Similarly, any pumping, hosing, or temporary earthwork required for water discharge is considered subsidiary to the impoundment work (no separate pay).

(In summary, the Contractor will be paid for neutralization by gallon of caustic soda used, and the general effort of water handling either by a lump sum item or included in earthwork. The Contractor bears the risk that more or less chemical may be needed than estimated. The provided unit price should reflect all associated costs of using that chemical.)

3.8 TREATMENT AND DISCHARGE SUMMARY

A. (Revise) Replace previous impoundment data and references with the following:

The water-filled pits identified on the Plans will require dewatering. According to bathymetric surveys and field sampling completed in July 2023, maximum depths, muck thickness, pH, and volumes are summarized in the "Existing Water-Fill Pit Information" table below.

A surface water sample was collected from each pit. Laboratory results for pH are shown in the table. Additional water quality characteristics are available for review through the Engineer.

For bidding purposes, assume at least one (1) composite sample from each pit requiring dewatering. Lime treatment is not anticipated unless otherwise directed; caustic soda neutralization shall be the primary method.

3.11 MEASUREMENT AND PAYMENT

A. (Revised) Impoundment Discharge: If a bid item "Impoundment Discharge and Treatment" (Lump Sum) is provided, it will cover all work related to planning, treating, and discharging all pit water on the site (excluding the cost of the neutralizing chemical itself). This lump sum shall include development of the Neutralization Plan, water quality testing, neutralization labor and equipment, pumping and dewatering, temporary containment or outlet works, and management of residuals. If no separate item is listed, then all such work is incidental to the Earthwork grading items.

B. (Added Language) Caustic Soda (20–25% Liquid): Caustic soda solution used for neutralization will be measured by the Gallon actually used on site and will be paid at the contract unit price per gallon. This payment

covers furnishing the chemical, transportation, storage, handling, and application into the water (including any equipment like pumps or sprayers used specifically for applying the chemical). The Contractor must provide delivery tickets or logs to verify the quantity of caustic soda used. Any unused chemical at the end of the project is to be removed by the Contractor (and will not be paid).

C. (Added Language) Incidentals: No separate payment will be made for field testing equipment (pH meters, etc.), minor consumables for neutralization (like baking soda for spills, or indicator solutions), or for extra labor time spent in monitoring treatment. These costs shall be included in the bid prices for the work (either the lump sum for discharge or overhead in general). Similarly, any pumping, hosing, or temporary earthwork required for water discharge is considered subsidiary to the impoundment work (no separate pay).

(In summary, the Contractor will be paid for neutralization by gallon of caustic soda used, and the general effort of water handling either by a lump sum item or included in earthwork. The Contractor bears the risk that more or less chemical may be needed than estimated. The provided unit price should reflect all associated costs of using that chemical.)

SECTION 02120 – SEDIMENT AND EROSION CONTROL

1.1 DESCRIPTION

A. (Added Language) In addition to the Standard Specification, ensure all requirements of the Storm Water Pollution Prevention Plan (SWPPP) are followed. The Contractor must implement and maintain erosion and sediment control Best Management Practices (BMPs) to prevent sediment from leaving the project limits or reaching any off-site watercourses. If field conditions or weather events necessitate additional measures beyond those shown in the Plans, the Contractor shall notify the Division and Engineer and install appropriate additional BMPs as directed (at no additional cost if minor).

2.1 MATERIALS

F. Wattles

1. (Revised) Stakes shall be one (1) inch by two (2) inch wood stakes.
2. (New Paragraph) Wattles shall have a nominal diameter of twelve (12) inches.

H. Tied Concrete Block Mat (TCBM)

1. (Added Language) Tied Concrete Block Mats shall conform to the details and tables shown on the Plans and shall be installed in accordance with the manufacturer’s recommendations.

I. Stabilized Construction Entrance (SCE)

1. (Added Language) SCE stone surfacing shall be furnished as required by the Plans and SWPPP for controlling sediment tracking at site entrances and designated parking areas.

J. Linear Sediment & Diversion Controls

1. (New Paragraph) Linear sediment and diversion controls shall consist of wattles and temporary earth diversion (ditch-and-berm) structures as shown on the Plans.
2. (New Paragraph) Wattles shall have a nominal diameter of twelve (12) inches and be staked with one (1) inch by two (2) inch wood stakes at intervals not to exceed four (4) feet.
3. (New Paragraph) Diversion structures shall be constructed from onsite soil materials to the lines and grades shown on the Plans or as directed.

3.3 INSTALLATION OF SEDIMENT AND EROSION CONTROL MEASURES

E. Temporary Earth Diversion Structures

1. (Added Language) Construct ditch-and-berm diversions at locations shown on the Plans or as directed to intercept runoff above disturbed areas. The ditch and berm may be constructed by rotating the dozer or grader blade and rolling material from the ditch to the downgradient side to form the berm. Additional compaction is not required.
2. (New Paragraph) Prior to construction, the Contractor shall submit a typical section for Temporary Earth Diversion for Engineer approval, showing ditch depth, berm height and crest width, side slopes, and tie-ins. Unless otherwise approved, use a standard typical section with minimum ditch depth of eighteen (18) inches, berm height of eighteen (18) inches above adjacent grade, berm crest width of two (2) feet, and side slopes not steeper than three horizontal to one vertical (3H:1V).

M. Wattles

1. (Added Language) Provide wattle protection at risers, intakes, and pipe inlets at the time of their initial installation, as shown on the Plans. Wattles shall be trenched a minimum of six (6) inches and staked at intervals not to exceed four (4) feet.

N. Tied Concrete Block Mat (TCBM)

1. (Added Language) Install TCBM at the locations and to the dimensions shown on the Plans. Installation shall include subgrade preparation, placement, anchoring, and incidental items shown on the Plans and in accordance with the manufacturer's guidelines.

O. Stabilized Construction Entrance

1. (Added Language) Construct SCE at the locations and dimensions shown on the Plans. Maintain the entrance to prevent tracking of sediment onto public roads and promptly remove any tracked material from adjoining roadways. Unless otherwise directed by the Engineer or Division, the SCE may remain at completion.

E. Linear Sediment & Diversion Controls

1. (New Paragraph) Wattles shall be trenched a minimum of six (6) inches and installed at risers, intakes, pipe inlets, and as otherwise shown on the Plans.

2. (New Paragraph) Temporary diversion ditch-and-berm structures shall be constructed by rolling material from the ditch to the downgradient side to form the berm. Compaction is not required unless directed.

3. (New Paragraph) Prior to construction of temporary diversion structures, the Contractor shall submit a typical section for Engineer approval showing ditch depth, berm height, berm crest width, side slopes, and tie-ins. Unless otherwise approved, use a minimum ditch depth of eighteen (18) inches, berm height of eighteen (18) inches above adjacent grade, crest width of two (2) feet, and side slopes not steeper than three horizontal to one vertical (3H:1V).

3.11 MEASUREMENT AND PAYMENT

A. Wattles – Installation

1. (Added Language) Measured by the Linear Foot of wattle installed, complete in place, including trenching, staking, and maintenance. Removal, if required, is incidental unless a separate bid item is provided.

B. Temporary Earth Diversion

1. (Added Language) Measured by the Linear Foot of diversion constructed to the approved typical section and to the lines and grades shown on the Plans. Maintenance and removal/restoration are incidental unless a separate bid item is provided.

C. Tied Concrete Block Mat

1. (Added Language) Measured by the Square Foot in place. All incidental work necessary for installation shown on the Plans is subsidiary to TCBM.

D. Stabilized Construction Entrance

1. (Added Language) Measured by the Ton of stone placed. Placement, shaping, and maintenance are incidental to SCE. Unless otherwise directed by the Engineer or Division, removal is not a separate pay item.

E. Linear Sediment & Diversion Controls

1. (New Paragraph) Measured by the Linear Foot of wattle or temporary diversion constructed, complete in place, including trenching, staking, maintenance, and removal/restoration if required.

F. Summary – Proposal Bid Items Under This SECTION

1. (Revised) The following bid items apply to work under this SECTION:
    1. Wattles – Installation (LF);
    2. Temporary Earth Diversion (LF);
    3. Tied Concrete Block Mat (SF);
    4. Stabilized Construction Entrance (Ton)
    5. Linear Sediment & Diversion Controls (LF).

SECTION 02200 – EARTHWORK, ROUGH GRADING

1.2 QUALITY ASSURANCE

E. (New Paragraph) GPS Machine Mounted Grade Control Equipment

1. The Contractor's attention is specifically called to the recommendation for the Contractor to provide GPS Machine Mounted Grade Control Equipment for finishing of the final design surface. The reclamation plan incorporates natural landform grading and traditional terrace techniques, which precludes the use of uniform slopes, and is difficult to represent with traditional grade control staking.

2. If GPS Machine Mounted Grade Control Equipment is used, the Contractor should provide competent, task-trained personnel to operate and maintain the GPS equipment. If used, the Contractor shall supply the GPS equipment ready to use including all base stations, radios, repeaters, receivers, and machine mount units necessary to perform the work.

3. If GPS Machine Mounted Grade Control Equipment is used, the Engineer will provide survey control points to the Contractor and will provide Digital Terrain Model (DTM) files in an electronic format compatible with the Contractor's GPS equipment.

1.3 JOB CONDITIONS

C. Earthwork Balance

4. (Added Language) The Shrinkage Factor for the proposed grading is assumed to be **12%** for mass balance.

D. Original Ground Lines

1. Existing topography shown on the Plans was developed using publicly available LiDAR data for Marion County and supplemented with topographic and bathymetric survey data in select areas.

1.6 SITE DISTURBANCES

B. (Added Language) The project area and project access routes do not overlap with CRP land.

3.8 EXCAVATION

A. (Clarification) All excavation is unclassified (common excavation of spoil, coal refuse, old highwalls, etc.). Materials to be excavated include soil, rock fragments, coal debris, etc., and shall be excavated to the lines and grades shown. There is no separate Rock Excavation item; any hard rock encountered is considered incidental to the excavation bid item. The Contractor has inspected the site and is deemed satisfied with the character of materials to be moved. Blasting is not permitted due to proximity of structures.

B. (Added Language) The Contractor should attempt to salvage any pockets of decent soil encountered during excavation (e.g., layers of topsoil or loess atop highwalls) for later use in final cover or seedbed preparation. Such material, if free of toxic spoil, can be stockpiled for spreading on graded areas before seeding. Coordinate with Engineer to identify suitable salvageable soil. (This work is incidental to excavation; there is no topsoil pay item.)

C. (Clarification) Oversized materials: Boulders >18 inches or other large debris encountered shall be relocated and buried as described in Standard Spec (at least 3 feet below finished grade), typically within deep fill areas. If exceptionally large boulders are encountered that standard equipment cannot move, notify Engineer for decision – likely such objects will be left in place and covered, or broken mechanically. No extra payment for rock.

F. (Reiteration) Excavation sides and slopes must be maintained safely at all times in accordance with OSHA standards for trenching and excavation. The Contractor is solely responsible for slope stability and excavation safety. No separate payment for excavation support or benching if needed for safety.

G. (Added Language) Highwall Excavation: The Contractor shall take particular care when excavating into the base of existing highwalls or spoil piles. Remove material in lifts and do not undercut. If a highwall shows signs of potential collapse, build a safety berm and consult the Engineer. The aim is to blend highwalls to 3H:1V or flatter; any remaining cliff sections that cannot be safely cut should be reported. (All highwall excavation is incidental to overall excavation quantities.)

H. (Added Language) Contaminated Material: If any unusual material is encountered (e.g. waste, barrels, oil sheen), stop and notify Engineer. Such material will be evaluated and handled per Division direction. (Not expected; none known on site.)

3.9 FILL PLACEMENT AND COMPACTION

A. (Revised) Fill shall be placed in twelve (12) inch or less loose thickness if compacted with rubber tire equipment and nine (9) inches or less loose thickness for tracked equipment.

H. (New Paragraph) Deep fill zones: zones requiring placement of fill deeper than fifteen feet (15’) shall require extra time to allow for settlement of the soil. Once each increment of 15’ of fill is achieved at least thirty (30) days shall be allowed to elapse before performing additional fill operations in that zone. The waiting period may be reduced to no less than fifteen (15) days provided Contractor documents with detailed daily survey measurements that the majority of the settlement has occurred

within the first 15-day waiting period. Establishment of benchmark locations for survey measurement shall be subject to Engineer's approval

3.13 MAINTENANCE

G. (New Paragraph) All maintenance, as described in this section, shall be considered incidental to the project and shall be completed at no additional cost to the Division.

SECTION 02220 – EARTHWORK, DAMS

1.2 QUALITY ASSURANCE

E. (Revised) The services of a Geotechnical Engineer are not anticipated for this contract. If those services become necessary, the Division will reimburse Contractor the actual extra costs of those services that are verified with invoices from the approved Geotechnical Engineering firm selected by Contractor. Costs for meals and lodging incurred by the Geotechnical firm will not be reimbursable.

3.2 ELEVATIONS AND LINES

E. (New Paragraph) Where required, ridges of terraces shall be overbuilt as indicated on the Plans to accommodate anticipated future settlement. The overbuilt ridge of the terrace shall taper from its mid-point to zero (0) inches at both toes of slope.

3.5 SUBGRADE PREPARATION

C. (New Paragraph) Prior to backfilling, the approved subgrade shall be scarified with suitable equipment to facilitate a bond with the backfill.

3.13 TESTING

A. (Revised) No field or laboratory tests pursuant to this SECTION are anticipated for this project.

B. (Revised) No proctor tests pursuant to this SECTION are anticipated.

C. (Revised) No in-place density tests pursuant to this SECTION are anticipated. Compaction shall be evaluated by visual means. For purposes of this section, soil shall be considered compacted when the tamping-type roller is fully supported. Water shall be added, or wetter soil shall be incorporated if the soil is too dry to be compacted. If soil is too wet for compaction, incorporate suitable dry soil.

3.14 MEASUREMENT AND PAYMENT

C. (Added Language) Controlled General Fill, Earth Dam: The unit price for this item shall include all special handling, equipment, materials, and labor required to properly place approved material for constructing any structures.

SECTION 02300 – DRAINAGE SYSTEMS, GENERAL

2.3 OUTLETS FOR TILING OR PIPE

1. (Revised) Non-perforated DWPE may not be substituted for PVC Schedule 40 for this project.

2.6 FILTER FABRIC

A. (Revised) Filter fabric: Filter fabric shall be understood to mean non-woven fabric comprised of randomly-placed needle-punched, resin bonded, or heat bonded synthetic fibers. Filter fabric shall meet the requirements of IDOT Section 4196.01-B 3, Embankment Erosion Control.

B. (Added Language) Woven Geo-Fabric: Woven Geo-Fabric must be suitable for soil stabilization and reinforcement. Woven fabric shall be formed by the uniform and regular interweaving of the threads or yarns in two directions. Woven fabrics shall be manufactured from high tenacity polypropylene yarns formed into a uniform pattern with distinct and measurable openings, retaining their position relative to each other. The edges of the woven fabric shall be finished to prevent the outer yarns from unraveling. Woven Geo-Fabric shall meet the Minimum Average Roll Values (MARV) requirements specified in Table 02300—1. A product that meets these requirements is Tencate Mirafi RS380i. Engineer approved equivalents to this product shall be acceptable. For evaluation of equivalent material(s), a listing of physical characteristics along with a sample of the equivalent product(s) should be submitted to the Engineer for review.

Table 02300-1: Physical Characteristics of Woven Geo-Fabric (MARV)

Flowrate:	ASTM D-4491, 75 gal/min/ft^2 (liters/min/m2)
Apparent Opening Size:	ASTM D-4751, #40 U.S. Sieve (0.425 mm)
Roll Dimensions (w x l):	15’ x 300’ (4.57m x 91m)
Tensile Strength @ 2% Strain:	ASTM D-4595 Machine Direction (MD), 600 lb/ft (8.8 kN/m) Cross Machine Direction (CMD), 1020 lb/ft (14.9 kN/m)
Tensile Strength @ 5% Strain:	ASTM D-4595 Machine Direction (MD), 1800 lb/ft (26.3 kN/m) Cross Machine Direction (CMD), 2256 lb/ft (32.9 kN/m)
Soil Interaction Coefficient:	ASTM D-6706 0.89 (minimum test value)
UV Resistance (at 500 hr):	ASTM D-4355, 90% Strength retained

2.17 GRANULAR BEDDING (NEW SECTION)

A. Granular bedding shall consist of well-graded durable aggregate placed in the thicknesses shown on the Plans. All material comprising the granular bedding shall be composed of durable particles reasonably free of sharp or angular particles capable of puncturing the filter fabric.

B. The aggregate shall have a gradation that conforms to the Iowa Department of Transportation specifications for pipe bedding material, Gradation No. 3. Refer to IDOT Section 4118.

Sieve Designation	Gradation No. 3 Percent Passing
1 ½”	100% passing
1”	95-100% passing
½ ”	25-60% passing
Less than No. 4	0-10% passing

3.5 TERRACES

A. (Revised) After placement and approval of controlled general fill areas, terraces shall be installed during and as a part of rough grading. The earthwork volume to construct the terraces is included in the overall excavation earthwork balance for the project. Refer also to Supplemental Specification SECTION 02200, 1.3. B.1.

3.6 TILING AND PIPE

A. Tiling

6. (Revised) Granular backfill around pipe: where specified on the plans, construct a backfill envelope around the pipe using 1" clean angular crushed stone (Class 1 granular backfill). The envelope shall conform to the minimum trench width specified in the plans. The length of the granular backfill zone shown on the plans shall be considered the minimum length. The granular backfill shall be consolidated under the pipe haunches, and it shall be compacted with suitable tamping or vibratory equipment. The entire pipe envelope with the granular backfill shall be encased within filter fabric. Details on the plans shall be followed. The cost of the granular backfill and filter fabric is incidental to the cost of the pipe.

11. (New Paragraph) Tiles discharging on-site shall have an outlet pool as shown in Detail 1 on Sheet 12 of the Plans.

3.7 RISERS AND OPEN SIDED INTAKES

A. (New Paragraph) Existing Risers

1. Where indicated on the plans, excavate and remove existing riser(s) to the full depth including the elbow or tee.

2. Follow and expose all connected pipes or tiling for a minimum distance of ten (10) lineal feet horizontally beyond finished grades or a minimum three (3) feet below finished grades. If so directed by Engineer, expose additional length of pipe at no additional cost to Division.

3. Cut and remove pipe or tiling so exposed. All removed pipe material shall be disposed offsite.

4. Backfill pipe opening(s) that remain(s) with a mixture of high quality sodium bentonite and suitable site soil at a minimum ratio of 1 part granular bentonite to 5 parts soil. Pack bentonite-soil mixture into the pipe opening with hand tools.

5. Once pipe opening is closed backfill and compact remaining excavation to finished grade with suitable site soil while applying at least one-half pound (0.5 Lb.) granular bentonite per one (1) inch of soil thickness. Each lift of soil shall not exceed six (6) inches and it shall be thoroughly mixed with the bentonite. See also Table 3 of NRCS Code 520 in the Appendix to these specifications.

3.9 RIPRAP DITCHES & OTHER RIPRAP WORK

A. The subgrade shall be prepared and compacted as specified in Section 02220 EARTHWORK, DAMS, Items 3.5 *Subgrade Preparation* and 3.9 *Controlled General Fill Placement*.

3.11 GRANULAR BEDDING (REPLACED - NEW SECTION)

A. Granular bedding material shall be placed in one or more lifts on compacted subgrade. The subgrade shall be prepared and compacted as specified in Section 02220 EARTHWORK, DAMS, Items 3.5 *Subgrade Preparation* and 3.9 *Controlled General Fill Placement*.

B. The top surface of the granular bedding shall be raked or otherwise spread to provide a uniform bedding plane for the overlying filter fabric and/or riprap.

C. All filter fabric and granular bedding shall be in-place and approved by the Engineer prior to riprap or erosion stone placement.

3.13 MEASUREMENT AND PAYMENT (RENUMBERED AND REVISED)

A. (Revised) Terrace: The cost for rough terrace construction and compaction shall be considered incidental to and included in the unit price for Excavation as referenced in SECTION 02200. The unit price for terraces in this SECTION shall include material, equipment, and work required to finish grading the terraces in conformance with details and dimensions shown on the plans. Finish grading the terraces includes overbuilding the terrace where specified. The length shall be measured along the centerline of the terrace. The maximum payable length for installed terraces shall be the bid plan quantity.

E. *Pipes*: The existing 4-feet by 4-feet wooden box culvert under 320th Street is scheduled to be replaced to allow free flow as a result of this project. The wooden box culvert will be replaced by the Marion County Secondary Road Department with no cost to this project.

K. (Replaced – New Paragraph) *Granular Bedding:* The unit price shall include all materials and work required for installation of the granular bedding in conformance with these Construction Specifications and the Plans, including excavation, removal and disposal of excavated material, and furnishing and placing of the stone. Measurement for payment shall be based on the tonnage of granular bedding actually installed as determined from weight tickets, rounded to the nearest one-tenth (0.1) ton. Only material placed in accordance with the Plans and these Specifications shall be measured and paid.

M. *(Renumbered and Revised) Summary:* Proposal Bid Items applicable to work covered by this SECTION are as follows:

Description	Unit
Terraces	Lineal Foot
Riser – Terrace	Each
~~Open Sided Intakes~~	~~Each~~
Tiling - (size)	Lineal Foot
Pipes – (size)	Lineal Foot-Each
Outlet Pipe – (size)	Each
~~Filter Fabric~~	~~Square Feet~~
Riprap	Ton
~~Erosion Stone~~	~~Ton~~
~~Grout~~	~~Cubic Yard~~
Granular Bedding (New)	Ton
Finished Grading, Channels (New)	Lineal Foot

SECTION 02400 – SUBGRADE PREPARATION, WITHOUT COVER MATERIAL

1.4 SUBMITTALS

D. (New Paragraph) Contractor shall schedule and coordinate all construction activities requiring observation and testing with Engineer and the Division.

2.2 MULCH

E. (New Paragraph) Woodchips produced from the shredding of trees removed during clearing may be used in lieu of mulch materials specified in paragraph A, B, and C of this part if the following conditions are met subject to approval of the Engineer and Division.

1. Woodchips shall be processed so that individual particles are reduced to a sufficiently small size (typically passing a one-half inch [1/2”] screen) to decompose in the soil within a sixty (60)-day

to ninety (90)-day period. Particle size shall be subject to visual inspection by Engineer. Engineer reserves the right to require additional processing if particle sizes are too large.

2. Addition of nitrogen fertilizer during subgrade preparation may be required to facilitate decomposition of the woodchips.

3. Subject to approval of Engineer, Contractor shall provide appropriate means and methods to verify that a sufficient amount of woodchips are applied to the site pursuant to 3.3 B. 3, 3.3 E. 3, and 3.4 A. 2, of this SECTION.

F. (New Paragraph) Compost derived from processed woodchips, food waste, and other acceptable organic waste may be used in lieu of mulch materials specified in paragraph A, B, and C of this part if the following conditions are met subject to approval of the Engineer and Division.

1. Compost material shall be aged at least 12 months and sourced from an approved supplier.

2. Compost shall have been screened through a one-half-inch screen.

3. Contractor shall provide moisture information with weight tickets to verify that a sufficient amount of compost is applied to the site pursuant to 3.3 B. 3, 3.3 E. 3, and 3.4 A. 2, of this SECTION.

3.3 WETLAND AREAS

G. (New Paragraph) Final Grading of Wetland Bottoms

1. Following undercut, replacement, and incorporation of agricultural lime and mulch, strike off or blade wetland bottoms with tracked equipment to leave a smoothed, firm surface prior to introducing water into the wetland area.

2. Cost for final grading of wetland bottoms is incidental to the bid unit price for Wetland Undercut & Replacement.

3. Contractor shall provide moisture information with weight tickets to verify that a sufficient amount of compost is applied to the site pursuant to 3.3 B. 3, 3.3 E. 3, and 3.4 A. 2, of this SECTION.

H. (New Paragraph) Removal of Accumulated Water and Sediment in Wetland Bottoms

1. If water and sediment has been allowed to accumulate in the bottoms of wetland areas prior undercut, replacement, and final grading operations, the water and sediment shall be removed to facilitate the required work.

2. Methods used to remove accumulated water include pumping and diversionary channels. Other methods shall be subject to approval by Engineer or Construction Observer.

3. Accumulated sediment shall be removed with appropriate equipment using methods approved by the Engineer or Construction Observer.

4. Costs for the removal of water and sediment shall be considered incidental the project.

3.4 LIME-MULCH APPLICATION (REVISED)

B. Application Rates

1. Contractor shall apply lime at a rate of 40 tons ECCE/acre for bidding purposes. Actual application rate will vary depending on the recommendation of the soil tests.

3.6 MEASUREMENT AND PAYMENT (RENUMBERED AND REVISED)

E. (New Paragraph) Deep Ripping: Contractors unit price for deep ripping shall constitute full payment equipment, and labor to provide deep ripping in the zones identified on the plans. Payment for the deep ripping area will be based upon the areas as shown on the plans rounded to the nearest tenth (0.1) acre. Any approved field adjustments made will be measured jointly by Contractor and Engineer.

F. (Renumbered and Revised) *Summary*: Proposal bid items applicable to work covered by this SECTION are as follows:

Description	Unit
Agricultural Lime, Subgrade	Ton (ECCE)
Mulch, Subgrade	Acre
Wetland Fertilizer	Pound
Wetland Undercut and Replacement	Acre

SECTION 02500 – FENCING

1.1 DESCRIPTION

A. (Revised) The work under this SECTION shall consist only of furnishing and installing fence posts at the spacing shown on the Plans. No wire, braces, or gates are required unless otherwise directed by the Engineer or Division.

2.1 MATERIALS

A. (Added Language) Fence posts shall conform to the requirements of the 2025 Standard Specification SECTION 02500 – FENCING for wood posts, including size, treatment, and quality.

3.2 INSTALLATION

A. (Added Language) Fence posts shall be set at intervals of ten (10) feet, or as otherwise shown on the Plans.

B. (Added Language) Posts shall be installed in accordance with 2025 Standard Specification SECTION 02500 requirements for setting depth, plumb, and backfill.

3.11 MEASUREMENT AND PAYMENT

A. (Revised) Fencing for this project will be measured and paid by the post installed.

B. (Added Language) The unit price for posts shall be full compensation for furnishing, hauling, and installing posts complete in place, including excavation, backfilling, and compaction around each post.

C. (Added Language) No additional payment will be made for wire, braces, gates, or other components not shown on the Plans or specifically directed by the Engineer or Division.

SECTION 02700 – PERMANENT SEEDING

2.4 SEED

C. Seed Mixture

2. (Revised) The seed mixtures for this project shall be as shown in Table 02700-1 (Upland Seed Mix) and Table 02700-2 (Cover Crop Seed Mix Options). The Contractor shall use the mixes specified in the Plans.

3. (Added Language) The Contractor shall consult with the Engineer and Division to determine the appropriate cover crop species based on the season of planting. Cover crop seed shall be applied with the permanent seed mix and is considered incidental.

Table 02700-1. Upland Seed Mix

Common Name	Scientific Name	Seed Rate (PLS/ac)
Partridge pea	*Chamaecrista fasciculata*	4.0
Alsike clover	*Trifolium hybridum*	4.0
Purple prairie clover	*Dalea purpurea*	0.7
Red clover	*Trifolium pratense L.*	2.0
Red fescue	*Festuca rubra*	8.0
Redtop	*Agrostis gigantea*	2.7
Timothy	*Phleum pratense L.*	6.7
Virginia wildrye	*Elymus virginicus*	6.7
Big bluestem	*Andropogon gerardii*	5.3
Little bluestem	*Schizachyrium scoparium*	4.0
Indiangrass	*Sorghastrum nutans*	4.0
Total		48.1

Table 02700-2. Cover Crop Seed Mix Options – Select one (1) in consultation with Engineer and Division.

Spring Cover (April 1 – May 30)		
Oats	*Avena sativa*	32

Dormant Cover (November 15 – Freeze Up)		
Winter wheat	*Triticum aestivum*	45

Dual-Season		
Oats + Winter Wheat	(each of above)	16 (Oats) + 30 (Wheat)

Table 02700-3. Clover Seed Mix

Common Name	Scientific Name	Seed Rate (PLS/ac)
Red Clover	*Trifolium pratense L.*	2.00
Alsike Clover	*Trifolium hybridum*	4.00
Perennial rye	*Lolium perenne*	10.00

Total	16.00

Table 02700-4. Wetland Fringe Seed Mix

Common Name	Scientific Name	Seed Rate (PLS/ac)
Virginia wildrye	*Elymus virginicus*	10.60
Fowl mannagrass	*Glyceria striata*	0.70
Bluejoint grass	*Calamagrostis canadensis*	0.70
Prairie cordgrass	*Spartina pectinate*	4.00
Fox sedge	*Carex vulpinoidea*	0.03
Bebb's sedge	*Carex bebbii*	0.04
Spikerush	*Eleocharis palustris*	0.05
Rice cutgrass	*Leersia oryzoides*	0.04
Shortawn foxtail	*Alopercurus aequalis*	10.60
Cup plant	*Silphium prefoliatum*	0.70
Total		27.46

Table 02700-5. Pollinator Seed Mix

Common Name	Scientific Name	Seed Rate (PLS/ac)
Timothy	phleum pratense L.	7
Indian grass	sorgastrum nutans	5
Orchard Grass	dactylic glomerata	5
Canada Wildrye	Elymus canadensis	6
Big bluestem	andropogon gerardii	6
Purple prairie clover	dalea purpurea	0.3
Alsike clover	trifolium hybridum	3
Alfalfa	Medicago sativa	5
Swamp Milkweed	Asclepias incarnate	0.3
Common Milkweed	Asclepias syriaca	0.3
Foxglove Beardtongue	Penstemon digitalis	0.2
Common Mt. Mint	Pycnanthemum virginianum	0.2
Showy Goldenrod	Solidago speciose	0.3
Smooth Blue Aster	Symphyotrichum laeve	0.2
Golden Alenanders	Zizia aurea	0.3
Culver's Root	Veronicastruc virginicum	0.2
Total		39.30

3.4 LIMING AND FERTILIZING

C. (Revised) For bidding purposes, assume the application rate of "Agricultural Lime, Seeding" is ten (10) tons ECCE per acre.

D. (Revised) For bidding purposes, assume the following fertilizer application rates:

Fertilizer	Rate (lbs/ac)

Nitrogen (N)	50
Phosphorous (P)	100
Potassium (K)	160

3.10 MEASUREMENT AND PAYMENT

C. (Revised) *Seeding:* The unit prices for Upland and Wetland Fringe Seeding shall also include all costs associated with cover crop seeding.

E. (Revised) *Summary*: Proposal bid items applicable to work covered by this SECTION are as follows:

Description	Unit
Agricultural Lime, Seeding	Ton (ECCE)
Nitrogen (N)	Pound
Phosphorous (P)	Pound
Potassium (K)	Pound
Upland Seeding	Acre
Clover Seed Mix	Acres
Mulch, Seeding	Acre
Wetland Fringe Seeding	Acre

END OF SUPPLEMENTAL SPECIFICATION